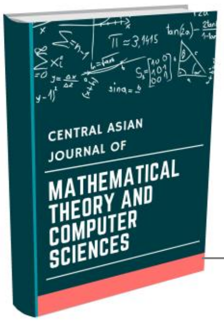


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Methods of Formation of Thinking Activities of High School Students

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Annotation:

This article provides information on the methods and stages of shaping the thinking activities of high school students.

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One of the most pressing tasks facing secondary schools and academic lyceums is the formation of creative activity in students and the ability to think independently underlying it. After all, only young people with independent creative thinking can make a worthy contribution to the bright future of our country.

It is known that in order to further improve the education system of the country, to accelerate the development of science, the President of the Republic of Uzbekistan Sh.M.Mirziyoev has adopted a number of decisions and their implementation is being ensured. In particular, the head of state stressed the need to reconsider the workload and the number of lessons in schools, to create a methodology that encourages students not only to memorize, but also to think.

The state education standards and qualification requirements state that one of the main goals of teaching mathematics in general education is to "help students develop their intellect and find optimal solutions to problems in nature and society as a result of the formation of consistent logical thinking."

Today, mathematicians and mathematician-methodologists emphasize the need to teach under the motto “mathematics for the student” rather than “student for mathematics”. In this regard, the issue of developing students' thinking in mathematics lessons is important.

An activity-oriented approach to thinking and the application of an active approach to education emphasize that students have the opportunity to form ways of thinking (analysis and synthesis, generalization and concretization, classification and systematization, abstraction and analogy) [1].

The problems of forming ways of thinking activities in students have been considered by researchers in different contexts:

- formation of logical ways of thinking in the study of higher mathematics;

- formation of methods of educational activity;
- Formation of mathematical concepts;
- teaching to prove mathematical sentences;
- cultivation of logical culture.

In these works, the logical methods of thinking, in particular, the methods of thinking activity, the need for special formation, the methods themselves, the exercises that help to master them, the time and duration of their study are given. However, the problem in the methodology of shaping the ways of thinking activity has not been considered. Emphasis is placed on mastering mathematical content using logical methods. In the process of mastering some mathematical content, little attention is paid to the formation of methods. A number of studies have shown the possibilities of applying thinking activity methods in geometry lessons. But on the basis of algebra and analysis, this issue has not been adequately addressed.

It is known that in addition to the volume of teaching materials of academic lyceums and general education specializing in mathematics, the abstractness of their description is higher than in school. Students with insufficiently developed methods of thinking become difficult to read successfully in this case, as they try to memorize the learning materials mechanically, resulting in strained memory, their exhaustion.

The theory of equality reflected in the concepts and terms of mathematical logic is used in solving the exponential, logarithmic functions, equations and inequalities associated with them, studied in the discipline "Fundamentals of Algebra and Analysis". Equations and inequalities are developed using descending and ascending analysis, synthesis, analogy, their classification, generalization, concretization. This requires the use of appropriate thinking activity methods.

The process of solving equations and inequalities is simplified by using some substitutions of the equations and inequalities. Simple equations and inequalities are solved using algorithmic instructions that reflect the sequence of actions. Sequence of actions is a method of learning activity. Learning activity methods are used in shaping thinking activity methods. However, the practice of teaching to solve equations and inequalities tends to remember ways to solve equations and inequalities in a particular way [2].

Observations have shown that although students have theoretical knowledge to solve proof problems, many of them find it difficult to distinguish between the condition of the problem and the result of the mathematical problem ("given-to-find", "if, then"), select the theoretical basis, formulate conclusions. . This is due to the low level of mastery of these ways of thinking. These methods should remain an integral component of the mathematics teaching process [3].

In research, the method of thinking activity is defined as a method in which students perform mental activity (internal view), while the method of external thinking activity is defined as a method of learning activity. The learning activity method is understood as a sequence of actions that serve to accomplish the thinking activity methods.

The process of forming ways of thinking activity in students requires a change in mental activity. It is subject to certain laws and is characterized by quantitative characteristics (method execution time, number of negative results, number of proposed action methods, etc.), which leads to qualitative growth, ie to a higher stage of formation [5].

The formation of different ways of thinking activities in students is carried out step by step. We note that the process of formation of methods is divided into stages, which are shown in the scientific and methodological literature and correspond to our research. Since the implementation of the method can be done in two stages, i.e. in skill and qualification, in which the latter is higher, we consider the stages of skill formation. The typical path of skill formation and development consists of the following four stages:

- acquaintance (understanding actions and their introduction);
- preparer (consciously, but not able to do well);
- standardized (automation of motion elements);
- variable or depending on the situation (adapting actions to other situations).

Upon successful completion of all four stages, students will be able to use thinking activity methods. Thus, the methods of thinking activity are formed.

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